



Occupational Hazards in Stomatology

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Abstract

An exhaustive bibliographic review was carried out on the main occupational risks in the field of stomatology, describing what consequences may occur in professionals and patients.

Keywords: Occupational Risk; Biosafety; Ergonomics

Introduction

Workplace accidents are considered a problem for health professionals and can be frequent in dental practice. Hard work has been done to find solutions, reduce them and ensure the health of professionals during their work. Multiple biosafety standards have been created and precautions that must be taken for each patient, to avoid temporary or permanent damage to health. Currently, disease prevention has an extraordinary value and all the effort made with this objective will never be enough. We must continue working every day alongside the development of new technologies, to always be one step ahead in protection against occupational risks in Stomatology. Universal History of Stomatology [1,2].

The history of Stomatology dates back to ancient times. It has been related to the evolution of man, the development of new skills and lifestyles, even with the change of eating habits, these being one of the main causes why dental pain appeared and the need to find a way to treat it arose. Primitive man according to ancient writings had a diet based on seeds, roots and all kinds of foods that he could find in his path, which helped him to have strong and long-lasting teeth. With the discovery of fire, 3000 BC, he began to use it for cooking, so he gradually incorporated other foods such as fish, starch, among others, which over the years were causing changes in the oral mucosa and teeth, giving way to gum diseases, oral infections and in one way or another to the appearance of tooth decay and with it pain. Therefore, it became necessary to find ways to solve dental problems at that time. The lack of specific in-

struments and materials forced them to use what they had at hand, whether stones, wood or any other element that would allow them to solve the problems that were presented, all this added to the absence of local anesthetics, which made the procedures more rustic and painful. With the passage of time and the evolution of medical technology, visits to the dentist have become routine and should be a priority if you want to maintain a healthy lifestyle and good oral hygiene [1,3].

Objective

Describe the main Occupational Hazards in Stomatology.

Reference search methods

The scientific information was compiled through a search using the following descriptors in English: The Medical Subject Headings (MeSH): "Hazards in Stomatology, dentistry, risks in dentistry

Analysis strategy

The search was based solely on hazards in Stomatology working conditions.

Developing

General occupational risks associated with the specialty. Occupational risk in dentistry is explained as the probability of injuries or damages occurring to professionals in the work environment. They have been classified in various ways by different authors, depending on the factors involved and the possible associated risks [4].

Physical risks

These are basically produced by physical factors; among which we can mention:

- **Vibrations:** These are produced by our instruments such as the handpiece among others, which produce constant vibrations that are controlled by the operator's hand and in turn, due to constant exposure, can cause severe damage at that level.
- **Noise:** This is produced by most of the equipment present in dental clinics, leading to injuries and severe consequences for health.
- **Ionizing radiation:** This is based on the consequences that can result from the constant use of X-ray equipment, lighting lamps, photopolymerization lamps, among others.
- **Lighting:** This is one of the factors that can produce serious visual risks for the professional in the case of being defective or due to continuous exposure [5-7].
- **Ventilation:** The best possible atmospheric conditions of temperature, humidity and movement must be ensured, ensuring that the work environment is acceptable. Otherwise, it can cause circulatory and respiratory damage to the professional.
- **Trauma:** In this case, foreign bodies such as tartar or mineral particles, among others, can be projected towards the face, or even towards the eyes. Therefore, the use of protective equipment is essential [5,6].

Chemical risks

These risks are characterized by the penetration of the chemical agent into the human body through three routes:

- The respiratory tract, through inhalation.
- The digestive tract.
- Through the skin and mucous membranes, in the case of fat-soluble substances. Some examples of materials include plaster, formaldehyde and its derivatives, acrylic resins, local anesthetics, eugenol, mercury, among others. Their continuous exposure can trigger various general and regional pathologies [8].

Biological risks

These risks include all fungal, bacterial, viral, parasitic and other diseases that can directly or indirectly affect the health of our professionals. It is also important to evaluate their transmission routes. In dental practice, contact with saliva, blood, secretions and even inhalation of aerosols contaminated with some harmful substance can be present on a daily basis. Among the most important communicable diseases are mentioned Viral hepatitis

- Acute pharyngitis (viral or bacterial)
- Epidermal mumps
- Herpes simplex
- Tuberculosis
- Syphilis
- Gonorrhea
- Infectious mononucleosis
- Influenza
- Rubella.
- HIV infection

The risk of occupational infection is mainly due to contamination of the nasal, ocular, oral mucosa, and even of the hands with blood, nasal secretions, vomit, saliva, and other infected organic tumors. It can also be caused by accidents such as punctures, for example, with contaminated material during the handling of patients [8,9].

Ergonomic risks

In Stomatology as a medical specialty, these risks are generally attributed to the working conditions that the professional presents and that in one way or another can affect their health, such as the design of work equipment, the anthropometric requirements that they must have to avoid body malformations, among others. Therefore, guaranteeing a constant evaluation of the work positions and working conditions will help them avoid serious injuries such as spinal static disorders, among others.

Psychological risk

This is one of the risks, which will be determined by several factors, such as the behavior of patients, psychosocial factors, the pressure to which professionals are subjected to always provide a good service, in addition to the rest of the factors that in one way or another can threaten the emotional stability of the worker. Specific occupational risks of each dental specialty. All branches of medical science encompass a group of factors considered occupational risks, since they can directly or indirectly affect the health of the professionals who practice it. In the case of Stomatology as a biomedical science, it has its own risks, which if a work accident occurs can compromise the health status and emotional stability of our workers.

Due to these elements, it is necessary to evaluate each one of them, even independently, since each dental specialty plays an important role, each having its own risks depending on the activity carried out. Comprehensive General Stomatology General stomatologists, as their name indicates, are capable of performing all kinds of procedures, which means they are forced to maintain strict

surveillance in their work and have control of everything that happens around them to avoid unforeseen events. When working with children and adults, you have to deal with different characteristics and behaviors, which makes them vulnerable [10-12].

In their work environment, they may accidentally receive injuries or punctures when working with needles and sharp instruments, poisoning by aerosols, by metal alloys such as amalgam, eye problems due to prolonged exposure to halogen light, ergonomic problems due to bad working positions, hearing problems due to the constant noise of the compressor and other dental equipment, musculoskeletal problems, mainly of the hands due to constant use of them. Also, due to direct contact with the patient's secretions, they may acquire any of the aforementioned diseases, among others. Stress is an important element to evaluate as well, since the variety of patients and procedures leads them to always be alert, so that overwork can also affect decision-making in some way [12-14].

Orthodontics as a dental specialty, orthodontics is responsible for maintaining the harmony and functional and morphological balance of the oral cavity and the face, correcting alterations in the shape of the dental arches, the position of the jaws and even dental alterations themselves. To carry out all these procedures, the orthodontist must be in contact with substances such as halogen resins and a number of materials, which if not given due care could cause work accidents due to misuse. In addition, the stress factor is also present, since it is a specialty that, although it treats adults, generally works with children, which makes its workers prone to expose themselves to psychological risk due to the different reactions that each of them may present [1,5,16].

In addition to all this, there are other risks that as dentists they are ultimately exposed to, so working in an environment that is as safe and calm as possible should be our priority as a preventive method in such situations. Periodontology This is a branch of dentistry that deals in general with the study and treatment of gums and alveolar bone. To do this, they use products and substances that, if not used correctly, can cause local damage, in addition to sharp instruments that could cause physical damage to the operator due to incorrect use. The rest of the surgical instruments are also present, where each one of them, especially the scalpel, can cause injuries and damage to the tissues, so the biological risk is also present in this specialty. To all this, we add all the other risks to which they are exposed by being part of this profession. Our objective must always be aimed at increasingly reducing the possibil-

ity of work accidents. All our study and work must be directed in that direction. Prosthesis In this specialty, the objective is to restore lost structures, whether dental or facial, using a prosthesis, emphasizing returning the functionality of the orofacial system to the patient. Prosthetists are often involved and exposed to a number of dental materials, including synthetic polymers, dental ceramics, metals, among others, which make them potentially vulnerable to chemical risks in this case. In addition, there are acoustic, physical, and thermal traumas, in this case burns from the use of lighters, blowtorches, or any other equipment used to make dental prostheses. Welding of materials can also cause accidents, eye damage from the use of high-speed tools, and the use of gas and other flammable liquids that are used can cause unwanted fires. All these elements make these professionals potentially vulnerable, and added to the stress caused by work overload, the risk of work accidents is always present [17,18].

Maxillofacial Surgery Maxillofacial surgery is a surgical specialty that deals with the diagnosis and treatment of all pathologies that may appear in the orofacial complex, whether they are traumatic, tumoral, congenital, reconstructive, iatrogenic, among others. For this reason, it becomes a profession where each of the aforementioned occupational risks are present and with which the surgeon has to live on a daily basis. The use of surgical instruments, whether sharp or cutting, direct contact with the patient's secretions, whether saliva, blood, or any other bodily fluid, eventually become biological risks to be taken into account. The long work days in hospitals, added to the number of medical guards, in turn increase the level of tension in surgeons, giving way to the so-called work stress that these professionals may present. Ergonomic risks are also present, due to extensive surgeries and long hours of standing or even sitting in the salon, which can result in musculoskeletal pain, due to not taking care of the correct positions to take in each case. In the chemical aspect, the use of disinfectant substances for procedures and cleaning of the salon, the use of gloves during work days, among other elements, can cause allergic reactions or associated diseases [19,20].

That is to say, basically work accidents and in turn the risks are a constant part of work. Therefore, creating a harmony between providing a good service and guaranteeing the health of workers is our duty. Occupational Diseases as consequences for the health of professionals in the sector. All the occupational risks addressed so far can affect the health of our doctors in the long term or even develop occupational diseases as a consequence of constant exposure to them. Therefore, it is worth mentioning some of them.

- Hearing loss and Tinnitus. Caused by the constant noise of dental equipment.
- Traumatic eye injuries. These are caused by projections of any object or particle into the ocular cavity, which would cause excessive tearing, conjunctivitis, corneal abrasion, pain, blurred vision and even cataracts in the case of frequent exposure to ionizing radiation. In the case of poor lighting, myopia, conjunctival hyperemia, visual fatigue would be added and in the case of excess light it can cause irreversible lesions in the retina.
- Carpal tunnel syndrome. Characterized by pain and paresthesia throughout the hand, which requires surgical treatment.
- Quervain's stenosing tendonitis. It is caused by tendon involvement in the wrist.
- Dupuytren's disease. Which is caused by microtraumas and repeated vibrations, causing vascular alterations and retractile fibrosis of the palmar aponeurosis of the hand.
- Epicondylitis. This is caused by sustained tension on the tendons of the extensor and supinator muscles of the forearm that insert into the epicondyle.
- Rotator cuff tendonitis. This occurs when the tendons of the muscles that connect the head of the humerus to the glenoid cavity of the scapula are affected. It generally occurs when we work with the arm above the shoulder.
- Spinal column disorders. This group includes cervical contracture, which may be accompanied by tension headaches, back pain due to paravertebral muscle involvement, and at the level of the lumbar spine, lumbago is common, which is very incapacitating and may even require sick leave.
- Allergic contact eczema or dermatitis. This can be related to contact with latex, iodine, acrylic resins, among others.
- Diseases due to exposure to ionizing radiation. This group includes radiodermatitis, hair loss, anemia, among others.
- Diseases due to direct inoculation or contact. These include tetanus, herpes simplex, viral hepatitis, acquired immunodeficiency syndrome (HIV), infectious or bacterial conjunctivitis, among others.
- Inhalation diseases. Such as tuberculosis, among others.
- Upper respiratory tract viral infections (IVTRS): Generally encompassing the common cold, influenza, among others caused by different viruses such as rhinovirus, coronavirus, etc.
- Chronic work stress. In which the professional may present different general alterations such as high blood pressure, headaches, palpitations, irritable bowel syndrome, muscle fatigue, muscle tremors, alopecia, irritability, loss of concentration, memory lapses, anxiety, insomnia, and even depression, depending on the case.
- Professional burnout syndrome or burnout syndrome. Which is characterized by feelings of professional inadequacy, emotional exhaustion, and depersonalization. Therefore, health professionals may feel that their work exceeds their capacity and feel disappointed, mentally exhausted and dissatisfied with their work achievements. These are some examples of diseases that can affect professionals in the sector, so creating measures to prevent them and complying with them must be within the framework of each of us. Measures to follow to reduce complications due to continuous exposure to these occupational risks.

Physical risks

- Adequate air conditioning in the workplace.
- Adequate lighting.
- Use safety glasses and eye protection.
- Disconnect electromagnetic equipment when not in use.
- Use vibration equipment only for the necessary time.
- Use all available protective means.

Chemical risks

- Control the quantities of materials to be used to avoid excess.
- Use gloves, preferably latex, for all procedures and handling of dental materials.
- Use the protective barriers available for handling mercury among other substances.
- Immediately change protective means in case of contamination. Biological risks • Adequate use of all barrier methods, such as gloves, face masks, protective glasses and face masks to avoid direct contact with the patient's fluids.
- Always prefer to sterilize rather than disinfect, depending on the case.
- Consider each patient as sick and potentially infectious.
- Maintain the cleanliness of the workplace.
- Emphasize the patient's medical history, carefully reviewing their personal and family medical history, travel history, allergies, medical history with previous treatments received, among other elements.
- Carefully handle each sharp-cutting instrument used.
- Package each material or instrument used in its respective waste containers.
- In the case of biopsies, they must be stored, handled and transported in their respective and closed containers.
- Vaccination of professionals must be active.
- Personal hygiene standards must be followed to the letter.

Ergonomic risks

- Constantly check the stability of the equipment to avoid unwanted positions.
- That they comply with the anthropometric requirements to facilitate our posture.
- Rest between patients, with the aim of stretching the legs and giving mobility to the body.
- Avoid static positions whenever possible during long periods of work.
- Do exercises regularly to prepare our body for work.
- Psychological Risks
- Avoid work overload, distributing it appropriately.
- Practice relaxation exercises, to obtain the mental peace that is needed in our work and thus be more focused on it.
- Avoid stress and be present, then work with the aim of reducing its effects on our body.
- Always keep a positive mind.

Conclusion

The dentist in his daily practice is exposed to multiple occupational Hazards, for example biological, chemical, physical, mechanical, and ergonomic risks. Patients and companions can also be affected in such an environment. So the universal principles of biosecurity fit all individuals and are inviolable.

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